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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,703	12/02/2004	Hisao Sato	08228/061001	6746
22511	7590	09/12/2007		
OSHA LIANG L.L.P. 1221 MCKINNEY STREET SUITE 2800 HOUSTON, TX 77010			EXAMINER TRAN, TAN N	
			ART UNIT 2826	PAPER NUMBER
			MAIL DATE 09/12/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/516,703

Applicant(s)

SATO ET AL.

Examiner

TAN N. TRAN

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 06/13/07.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) 11-17, 19 and 21 is/are withdrawn from consideration.  
5) ☒ Claim(s) 3-9, 18 and 20 is/are allowed.  
6) ☒ Claim(s) 1, 2, 10 and 22 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/12/07.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date, \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,10,22 rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. (JP-2000-299532) in view of Nagahama (7,095,051).

With regard to claims 1,10, Ozaki et al. disclose a substrate; a first superlattice layer 4 which is formed above the substrate and in which an n-type AlGa<sub>N</sub> layer and an n-type Ga<sub>N</sub> layer are alternately layered; a multiple quantum well layer 6 which is formed above the first superlattice layer 4 and in which a Ga<sub>N</sub>-based quantum well layer and a Ga<sub>N</sub>-based quantum barrier layer are alternately layered; and a second superlattice layer 9 which is formed above the multiple quantum well layer 6 and in which a p-type AlGa<sub>N</sub> layer and a p-type Ga<sub>N</sub> layer are alternately layered. (Note lines 1-7, paragraph 0067, page 13; lines 1-6, paragraph 0069, page 13; lines 1-7, paragraph 0072, page 14, fig. 1 of Ozaki et al.).

Ozaki et al. does not disclose the multiple quantum well layer having AlInGa<sub>N</sub> well layer and an AlInGa<sub>N</sub> barrier layer are alternately layered.

However, Nagahama discloses the multiple quantum well layer having AlGaIn<sub>N</sub> well layer (1a, or 1b) and an AlGaIn<sub>N</sub> barrier layer (2a,2b) are alternately layered. (Note figs. 7,15A,15B).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Ozaki et al.'s device having the multiple quantum well layer having AlGaInN well layer and an AlGaInN barrier layer are alternately layered such as taught by Nagahama in order to enhance a high efficiency of the light emitting device.

With regard to claim 2, Ozaki et al. disclose a buffer layer, a first GaN-based layer 2 which is formed above the buffer layer, and an n-type GaN-based layer 3 which is formed above the first GaN-based layer 2 are provided between the substrate and the first superlattice layer 4; a second GaN-based layer 5 is provided between the first superlattice layer 4 and the multiple quantum well layer 6; and a p-type GaN layer 10 is provided above the second superlattice layer 9. (Note fig. 1 of Ozaki et al.).

With regard to claim 22, Ozaki et al. disclose an n electrode 21 which is connected to the n-type GaN-based layer 3; a p electrode 20 which is connected to the p-type GaN-based layer 10; and a power supply which applies a voltage between the n electrode 21 and the p electrode 20. (Note fig. 1 of Ozaki et al.).

***Allowable Subject Matter***

2. Claims 3-9,18,20 allowable over the prior art of record because none of these references disclose or can be combined to yield the claimed invention.

### Response to Amendment

3. Applicant's arguments with respect to claims 1,2,10,22 have been considered but are moot in view of the new ground(s) of rejection.

### Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAN N. TRAN whose telephone number is (571) 272-1923. The examiner can normally be reached on 8:30-5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, PURVIS SUE can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2826

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

Aug 2007



SUPERVISORY PATENT EXAMINER